AMATEUR RADIO

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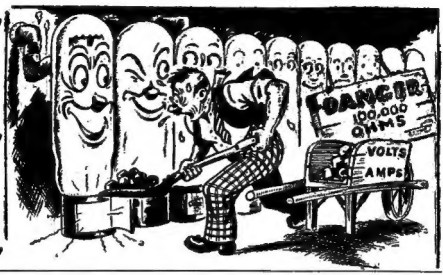

DON'T LET YOUR BOTTLES BE STOVES

Make them Ether Busters

with—

WESTINGHOUSE INSTRUMENTS . . .

Do you want to know if your tubes are putting out more watts in heat than in power? Or why that 47 that works FB on 40 won't perk on 20? Or why the output went up when you changed the self-biasing grid leak on one stage, whereas the same change in the high freq. stage made it go haywire? Or why the stage you "neuted" with the flash light lamp goes crazy when you put the juice on it?

All these questions can be answered easily by a couple of Westinghouse low-current-range types, MX or NX, d-c, instruments in the plate and grid circuits of an amplifier or doubler stage.

To help you in applying these instruments to your Xmitter, Westinghouse has printed a new folder that explains the meaning of the indications given by instruments in the plate and grid circuits, and points out what to do to get the best possible results from your equipment.

The information in this folder will help the brasspounder keep his amplifier and doubler stages on the straight and narrow, and make the old junk pile deliver more miles per watt, with the minimum waste of power to heat the shack. Send the coupon or a post card for your copy.

If you haven't a copy of our Catalog 43-340 on MX and NX Instruments, ask for it, too. It gives description and listing of a complete line of moderately priced radio instruments for panel mounting.

ALAN S. DUKE PTY. LTD.

486 BOURKE STREET, MELBOURNE, C. 1

Please send me the booklets checked below:—

F8315 The use of Westinghouse Instruments in Amplifier and Doubler Stages

Catalog 43-340—Types MX and NX Instruments

Name

City — Address

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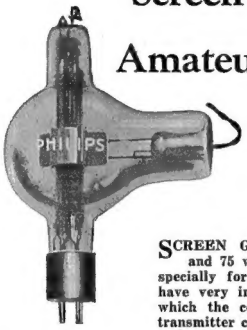
Screen Grid Valves
For
Amateur Transmitters



quarter of actual size

Types:
QB2/75, QC05/15

SCREEN GRID Transmitting Valves for 15 and 75 watts have been designed by Philips specially for use by amateurs. These valves have very important properties, as a result of which the construction and adjustment of the transmitter can be greatly simplified. The control-grid and anode of these valves are screened from each other by a screen-grid, thus reducing anode-control grid capacity to a minimum. When used as H.F. amplifier or frequency multiplier in controlled transmitters there is practically no reaction of the anode circuit on the grid circuit, and self-oscillation is impossible with screening outside the valve. Neutralisation is unnecessary, so it is very easy to alter the wave-length at short notice. These screen-grid valves give greater amplification than triodes under the same conditions.

Table A shows the various electrical properties of the Philips amateur transmitting valves:—

CHARACTERISTICS:

Table A. Type.	Screen Grid Valves QC 05/15.	QB 2/75
Filament Voltage	4.0	10.0
Filament current*	1	3.25
Saturation current*	400	2,000
Anode voltage	400-500	2,000
Screen grid voltage	75-125	300-500
Max. anode dissipation	15	75
Anode dissipation on test	20	100
Max. screen grid dissipation ...	3	15
Amplification factor*	225	200
Mutual conductance (slope)* ...	1.4	1.4
Int. resistance*	160,000	150,000
Anode-grid capacity	.001	.02
Max. diam. of bulb	50	100
Max length	160	210

*Approximate values.

PHILIPS
TRANSMITTING VALVES

AMATEUR RADIO

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EDITORIAL . .

JUBILEE WIRELESS INSTITUTE OF AUSTRALIA.

In March, 1910, a small group of wireless enthusiasts formed a society that was to become our present Wireless Institute of Australia.

Twenty-five years old this year, we commemorate our Silver Jubilee of the oldest National Amateur organisation in the World.

A year of celebrations and effort, it is hoped that every member will remember our age and standing, and make a special effort to enlist new members into our work. It's the personal contact that counts in this respect.

Co-incidental with our Jubilee, is the changing of the name in N.S.W. back to W.I.A. (N.S.W. Division) which no doubt will favorably affect the Institute, as the time honored title is well respected amongst the Amateurs of this State.

The past few years have been possibly the hardest that the Institute has ever passed through, not only due to the lack of the necessary amongst Amateurs, but also due to the fact that we have defined ourselves as being representative of the experimental side of radio only. This change may not have been too apparent, but it has been a decided underlying factor in our growth. The Institute should now be able to grow unfettered as a representative Amateur and Experimental body as, no doubt, our founders hoped we would. Personal effort is the watchword of effective growth, and we hope it is the aim of every member to carry our banner, display our inducement and reward to members, and to make 1935, for the world's oldest Amateur body, a year of prosperity.

In some States, the divisional Councils are making special efforts to commemorate the Jubilee, and it is hoped that every State will fall into line, and that our Silver Jubilee year will be long remembered.

EXIT THE A.R.A. (N.S.W.)

Not only does New South Wales feel very jubilant at this moment, but all Divisions of the W.I.A. are joining with them in welcoming back the name Wireless Institute of Australia (N.S.W. Division). The secretary of the late Association of Radio Amateurs (N.S.W.), and his energetic fellow councillors, have worked hard for a long time to get the name W.I.A. back for the N.S.W. members, and have at last succeeded. Hearty congratulations VK2.

The loss of the name W.I.A. in N.S.W. was brought about, in short, by the difference that arose between two parties, one with commercial interests, and the other with 100 per cent. amateur. The former wanted to commercialise the Institute and the latter did not. Thus, because of the prevailing power being commercially-minded at the time of the split, the name W.I.A. was withheld from the members who were in the game from a Ham point of view. Undaunted, the non-commercial minds got together and formed a new Association, the A.R.A. (N.S.W.). This is the body that has made such great strides in VK2 during the past few years. Being unhampered by any commercially-minded members, the association was able to devote its activities to the amateur solely, and its results speak for themselves. Not being satisfied with the success of its activities, the Council continued to fight for the name W.I.A., and now it has achieved its ambition, and the VK2's are 100 per cent. W.I.A., not only in spirit, but in name. With the Federal Executive on its hands and a host of keen members, the W.I.A. (N.S.W. Division) will most certainly go ahead, and further show what that bulldog amateur spirit can do.

We are quite certain that all Divisions will join in wishing the W.I.A. (N.S.W. Division) all success in the future.

Mixers — Attenuators and Pad Data

By H. R. James—VK3LH.

How often has an amateur, while working another Ham, wished to change from one type of microphone to another, and on doing so found that the results, much to their disgust, were not as were expected. This is probably because the matching is not correct, and the volume level control

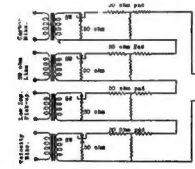


Fig 1.

not suitable. In this article, it is intended to give a little data on mixers, fixed attenuators, and pad data.

The mixer system is used where a number of input sources, such as microphones, pickups, and land lines must be coupled, either simultaneously or individually, to audio equipment. For proper operation, it should be possible to set the output level of each source independently of the others, and at the same time, to increase or decrease the level of their entire combined outputs. Each input source is operated into the primary of a mixer transformer. The secondary output is controlled with a T or H pad, and then the output of these pads is fed into a master control. Up to a few years ago, parallel mixers were used extensively, and in this system, the outputs of the individual gain controls are connected in parallel to the main control. Unfortunately, with this method, the action of the individual controls is not independent, and mismatch often occurs. The series type mixer is more customarily used at the present time, and Fig. 1 shows a 4 position series mixer which is being used with modern equipment.

Each microphone or pickup, etc., is fed to a matching transformer, whose secondary is normally loaded with a 50 ohm T pad, and the combined output is in turn controlled by a 200 ohm pad. When the primary side of the transformers are not loaded, the 50 ohm dummy resistance should be switched into circuit, to effect proper impedance relationship. This same circuit can be used where 2, 3, or 5 channels are to be used, and the mixer gain controls work perfectly in a circuit of this type. Any one of the channels can be raised or lowered in level from max. to min. without effecting the level or quality of any other channel. For smoothness of control, the gain control should be in steps of not over 2 db.

Sometimes it is found necessary to mix a carbon mike with a dynamic mike, and if identical gain controls are used for both these inputs, the high level control would have to be turned to almost the off position to operate properly. At this point, control is poor, and frequency discrimination often becomes appreciable, so to compensate for this effect, a fixed attenuator can be inserted between the high level source and the corresponding variable gain control. This attenuator can be chosen so that the final level of both sources is practically identical, and good control is possible.

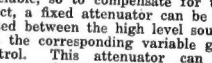


Fig 2.

An ideal attenuator must maintain proper impedance on both input and output, and must show no frequency discrimination throughout this audio range. The customary pads used for such service are the T, H, and double pi TT. Fig. 2 illustrates a chart designed to simplify the design of such networks for any attenuation from 0.1 to 100 DB. To examine the use of this chart, let us assume that it is desired to mix the carbon and

Note ZL (line impedance) = 500 ohms; $f = 11513$.

Attenuation No. DB	$A = \frac{ZL}{2} \times \text{Tanh} \frac{Nf}{2}$	$B = \frac{ZL}{\text{Sinh}(Nf)}$	$C = \frac{ZL}{2} \times \text{Sinh}(Nf)$	$D = \text{Tanh} \frac{Nf}{2}$
.1	1.440	43420.	2.879	86850.
.2	2.878	21720.	5.755	43440.
.3	4.318	14480.	8.635	28950.
.4	5.758	10850.	11.52	21710.
.5	7.193	8685.	14.40	17380.
.6	8.635	7232.	17.29	14480.
.7	10.07	6198.	20.17	12420.
.8	11.51	5421.	23.06	10870.
.9	12.95	4818.	25.95	9656.
1.0	14.38	4333.	28.85	8690.
2.0	28.65	2152.	58.08	4864.
3.0	42.75	1420.	88.08	2925.
4.0	56.58	1049.	119.3	2209.
5.0	70.03	822.4	152.0	1785.
6.0	83.08	669 4	186.8	1505.
7.0	95.65	558.0	224.0	1308.
8.0	107.7	473.1	264.3	1162.
9.0	119.1	405.9	308.0	1050.
10.0	129.9	351.3	355.8	962.5
15.0	174.5	183.6	680.8	756.3
20.0	204.5	101.0	1238.	611.2
25.0	223.5	56.4	2216.	559.5
30.0	234.7	31.65	3949.	532.7
35.0	241.3	17.79	7027.	518.
40.	245.1	10.	12500.	510 1
45.	247.2	5.624	22230.	505.7
50.	248.5	3.163	39530.	503.2
55.	249.2	1.775	70300.	501.8
60.	249.5	1.0	125000.	501.0
65.	249.8	.5623	222300.	500.5
70.	249.8	.3163	395400.	500.4
75.	249.9	.1779	703000.	500.2
80.	249.9	.1	1250000.	500.1
85.	250.	.0562	2223000.	500.1
90.	250.	.03161	3954000.	500.
95.	250.	.01879	7027000.	500.
100.	250.	.01	12500000.	500.

velocity mike as shown in Fig. 1 The difference in level between these units is about 60 DB. If they were operated directly into this mixer, the lower pad would be set at minimum loss, and the upper pad at max. loss, and we still would not have proper operation. Instead of this, a 60 DB attenuator could be inserted in the carbon mike circuit, making both inputs readily controllable. Referring to Fig. 2, we see that for 60 DB attenuation, a 500 ohm T pad can be constructed with the use of two 500 ohm resistance and one ohm resistance. There are many cases in public address work where it is found desirable to couple a number of mikes, pickups or tuner into an amplifier, without too complicated an intervening mixing circuit Through the use of simple fixed attenuation as described above, all inputs can be brought down to an equal level, and then a single volume control will govern the group. The most important accessory in speech input equipment is the level meter or volume indicator, generally indicated by the term VI., and is used to indicate the level at which output is held. This meter is generally calibrated from minus 10 to plus 6 decibel, and is connected directly across the output from the amplifier.

Investigation of Solenoid Design

By W. H. Black, A.W.M.C.—VK3WB.

During the course of the author's experience in solenoid design and construction, it has become apparent that progress in the design of single-layer air-cored solenoids, and of resonant circuits, has been retarded through lack of knowledge of the relationship existing between Nagaoka's constant, K, and the function 2a/b (vide infra). It was with a view to removing this barrier, and to extending the theory, that the present investigation was undertaken.

The inductance of a single-layer air-cored solenoid may be calculated from Nagaoka's formula—

$$L = \frac{0.03948\ a^2n^2}{b}\ K \qquad (1)$$

Where L = Inductance in microhenries.
a = Radius of coil in cm.
b = Length of coil in cm.
n = Number of turns.
K depends on 2a/b and may be evaluated from a table such as the following—

2a/b	K
0.00	1.0000
0.10	0.9588
0.30	0.8838
0.50	0.8181
0.60	0.7885
0.80	0.7351
1.00	0.6884
2.00	0.5255
3.00	0.4292
4.00	0.3654
10.00	0.2033

The usefulness of equation (1) would be increased if it could be simplified so as to render the use of tables unnecessary. Now, by plotting K for various values of 2a/b we obtain the curve of figure 1, from which it will be seen that K cannot be a trigonometrical or exponential function of 2a/b, but may be a hyperbolic function thereof. In investigation of this latter possibility, let us assume an arbitrary general relationship of the form—

$$K = \frac{x}{y + z(2a/b)} \qquad (2)$$

Referring to the table, when 2a/b = O, K = 1, whence substituting in equation (2)

$$1 = \frac{x}{y + z(o)} \qquad (3)$$

When 2a/b = 1.00, then K = 0.6844.

$$0.6884 = \frac{x}{y + z(1.00)} \qquad (4)$$

Eliminating x, y, z, between equations (2), (3), (4), we obtain

$$K = \frac{10b}{9a + 10b} \qquad (5)$$

Substituting this value of K in equation (1) gives

$$L = \frac{0.3948\ a^2n^2}{9a + 10b} \qquad (6)$$

If A and B be the distances, expressed in inches corresponding to a and b expressed in centimetres.

a = 2.54 A
b = 2.54 B

whence, substituting in equation (6)

$$L = \frac{1.003\ A^2n^2}{9A + 10B}$$

or approximately

$$L = \frac{A^2n^2}{9A + 10B} \qquad (7)$$

This equation, as well as rendering the use of tables unnecessary, and of being readily memorised is of considerably more value mathematically and practically than equation (1). It must be remembered, however, that equation (7) is purely an empirical relationship which, as can be shown mathematically, does not admit of any fundamental physical interpretation. Comparing the tabulated values of K with those obtained by the use of equation (5), and taking into account the error of 3 parts per 1000 in approximating to equation (7), it is found that the over-all error in calculations due to the use of equation (7) cannot exceed 2 per cent. if 2a/b be not greater than 4, i.e., if the dia-

meter is not more than 4 times the length of the coil. Hence, the equation can be used in the design of almost all single layer solenoids used in practical radio work.

Example 1. — A single layer solenoid of 40 turns is wound on a former of 3 inches diameter. If the length of the winding be 2 inches, calculate the inductance in microhenries.

Substituting in equation (7)

A = 1.5 inches
B = 2 inches
n = 40 turns

then L = 107.4 microhenries.

Example 2.—What must be the radius of a coil 2 inches long, of 15 turns, whose inductance is 20 microhenries?

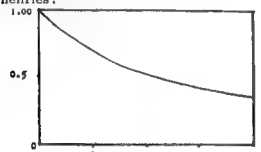


Fig. 1. SHOWING K plotted as a function of $\frac{a}{b}$.

Here L = 20
b = 2
n = 15

Therefore, substituting in equation (7)

$$20 = \frac{A^2(15)^2}{9A + 10(2)}$$

$$225A^2 - 180A - 400 = 0$$

Solving this as a quadratic in A we obtain A = 1.8 inches.

Example 3.—A coil of inductance 50 microhenries is to be wound to just fit on a former of 1½ inches radius and 3 inches long. What length of wire will be required?

w = 2 pi A n

where w = length of wire in inches

$$pi = \frac{22}{7}$$

$$\text{Therefore } n = \frac{w}{2piA}$$

Substituting this value of n in equation (7)

$$L = \frac{0.0253\ w^2}{9A + 10B}$$

or, approximately

$$L = \frac{1}{40} \cdot \frac{w^2}{9A + 10B} \qquad (8)$$

Now, L = 50
A = 1.5
B = 3

Hence, $w^2 = 40L\ (9A + 10B)$
$= 87{,}000$
w = 295 inches
= approximately 25 feet

IMPEDANCE AND SELECTIVITY.

The impedance of a parallel resonant circuit is given by the expression

$$Z = \frac{Lh}{CfR} \qquad (9)$$

where Lh and Cf are measured in henries and farads respectively, and R is the total resistance of the circuit at the frequency considered. The resistance R may be many times the direct current resistance. Owing to the gross uncertainty in calculating R, it is not possible to design a circuit of desired impedance by the use of equation (9) along. However, selectivity

$$S = \frac{2}{pi\ R} \cdot \frac{Lh}{Cf} \qquad (10)$$

$$\text{and } S = \frac{ha + h}{ha - h} \qquad (11)$$

where h is wavelength at resonance
ha is wavelength at which the current in the circuit is $\frac{3}{10}$ of the current at resonance.

Then, from equations (9) and (10),

$$Z = 1.57\ S \cdot \frac{Lh}{Cf} \qquad (12)$$

Further, remembering that,

$$h = 1885 \sqrt{L\ C} \qquad (13)$$

where L and C are measured in microhenries and microfarads, and combining equations (12) and (13),

$$Z = 2959 \frac{L\ S}{\sqrt{L}\ h}$$

$$\text{or } L = \frac{Z\ h}{2959\ S} \qquad (14)$$

(Continued on Page 25)

Using the 802 as an E.C. Oscillator

Practical Operating Details as Furnished by the Amalgamated Wireless Valve Co. Ltd., Sydney.

With the advent of R.F. Penthodes of to-day, the design of medium powered electron coupled oscillators presents an easy problem to the amateur. Highly adapted for this work is the 802 tube. Such an oscillator as described below should prove popular to those who prefer an unlimited variation of frequency not given by crystal control.

Operating under the following conditions in the attached circuit, the outputs obtained were as follows:—

Plate	500 volts	45 mA
Screen	250 volts	12 mA
Suppressor ..	40 volts	

Fundamental Frequency Output at 7 m.c. equals 11.3 watts at 51 per cent efficiency.

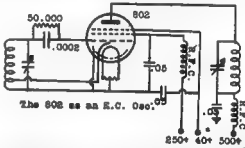
Second Harmonic Output (14 m.c.) equals 6.0 watts at 27 per cent. efficiency.

The output of the 802 as a straight oscillator under similar working conditions and input power is approximately 14 watts.

It is obvious that, for the frequency-doubling case, the plate dissipation is excessive, and for long valve life, means that the double-frequency output available is reduced to approximately 3.5 watts.

The relative inefficiency of the electron-coupled oscillator is due to the impossibility of fully exciting the control electrodes, but the resulting frequency stability is well worth while.

The electron-coupled oscillator must be regarded as an R.F. amplifier, the plate circuit of which is excited within the valve by R.F. voltages on both control and screen grids. At the same time, the tapped-off portion of the oscillator coil provides an external R.F. voltage in the plate circuit which opposes the R.F. current produced by the R.F. voltage at the control grid. For this reason, the excitation tap on the grid coil cannot be moved very far from the earthed or screen end of the coil. Another factor is that increase of this excitation increases the R.F. voltage excitation of the screen with respect to cathode, which also



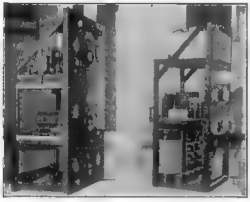
opposes the control grid excitation voltage, this being the main source of plate circuit excitation. This determines the optimum point for the excitation tap.

In order to reach a value of excitation voltage sufficient to obtain the efficiency equivalent to that of an ordinary oscillator, the control grid would require to reach a much higher positive value, to compensate for the "Bucking" R.F. voltage on the screen, and the portion of coil included in the plate-cathode circuit. This is impossible due to the heavy loading created by high positive values of grid voltage.

Station Description

VK3WI.

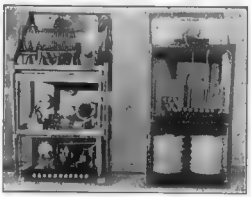
The official short wave station of the Victorian Division has been completed and is now ready to handle traffic and make broadcasts to members from the rooms at Law Court Chambers, Melbourne. The original transmitter was built some years ago by VK3WG for the Institute's activities at the aerodrome, Essendon. During the past few weeks, it has been rebuilt by VK3ML and VK3WG, using modern equipment and circuits.



The power supply at VK3WI is obtained through a motor generator set (3 KW) from the 440 volt DC mains. The generator is mounted on the roof of the building, and the automatic starter and overload relays, etc., are encased in the power unit of VK3WI senior, which is still under construction. This panel carries meters for measuring the DC voltage, AC output voltage, total current drawn, and the frequency of the generator.

VK3WI junior, which is represented by the two photos here, is in two units. The power rack carries the crystal oscillator, 400 volt DC supply obtained from a 280, and the buffer and final amplifier supply which is common to both stages. This power is rectified by a Philips 1 KW rectifier, which can be seen mounted in front of the large power transformer. The bank of condensers on the top stage do the necessary smoothing. All power switches are brought out to the front, and permit central control for the operator.

The R.F. portion of the works consists of a three stage unit, commencing with a type 42 tube as Tritet oscillator, followed by a 210 with split stator tank condenser. The final amplifier, a Philips TC1/50, is link coupled to the buffer; the link coil being apparent in the photo which also shows the flex lead to the grid coil of the power amplifier. Split stator tuning is again incorporated in the top stage, which greatly simplifies neutralising. As a matter of fact, when the transmitter was rewired, it



was found that one plate after another of the neutralising condenser had to be taken out, until four were left, and doubled spaced at that! The grid coil of the P.A. can be seen in the photo, behind the TC1/50 tube.

The aerial system employed is a standard full wave Zepp, strung between a 40-foot pole mounted on top of Law Court Chambers, and the lattice masts of the A.W.A. Company, four buildings away. Feeders of 99 feet form the transmission line.

VK3WI is capable of working on all frequency bands between 3.5 and 28 mc. The enrolment of operators is being carried out by the Council at present, and it is intended that this station be used for handling all W.I.A. traffic.

Where and How the Gadgets are Made

No. 1. — T.C.C. Condensers

In this article, the first of a series designed to impart to Hams some information as to where and how the multitudinous gadgets of the radio world are made, a description is given of a visit paid to the works of the Australasian Engineering Equipment Co. Pty. Ltd. The works comprise a fine two-storied modern factory, at 476 Latrobe Street, Melbourne. Here are made, from start to finish, the famous T.C.C. condensers, which are distributed at 415 Bourke Street.

The writer was taken in hand by Mr. D. J. Doughton, who shares with Mr. Hipgrave the management of this truly progressive concern. The works manager, Mr. L. Murphy, received us and the interesting story of the making of the condenser was unfolded.

The whole of the eastern side of the top floor is occupied by girl workers who are assembling the parts. Bright sunshine and fresh air combine to make their lot a happy one. They are deftly putting together the foil and the mica which form the component parts of the wonderful little T.C.C. gadget. At this stage it is interesting to learn that all the mica used is mined in Australia. In fact, wherever possible, local material is utilised, and where not possible, British. These girls work on the mica in such a way that any defects in the mica is revealed.

The next processes are the closing, trimming of the edges, and cutting, all delicate operations leading up to the electric welding on of the lugs. This is a most interesting sight, and no less than 7000 condensers a day can be turned off the two welding machines.

From here the partly-built condensers are chuted downstairs, where they are scientifically dried in thermostatically controlled ovens. From there they receive a further handling to prepare them for the well-known bakelite jacket.

The bakelite is an extremely important factor of the outfit. It is imported from England, in powder form, in large iron drums. The powder passes through clever little presses which compress it into the tablet shape. Each tablet becomes the coat of the mica and foil contraption already assembled upstairs, coated with a special hot wax, and then placed on trays, from which boy workers scrape and clean them off for the final process.

At this stage, the writer is shown the foil passing along from the original reels through an ingenious machine which ceaselessly and almost noiselessly clips it into the required lengths. This machine, which does its important job without any unnecessary fuss, was designed and manufactured at the works.

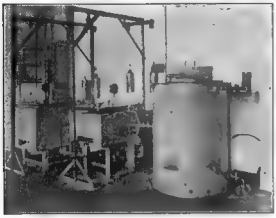
Upstairs again, where the all-important testing takes place. Along a face are rows of metal hooks, connected up with a 1200 volts testing board. Each single condenser is hooked up, and should there be a shorting or other defect, a miniature fireworks display takes place on that particular hook, a light flashes out, a bell rings, and, altogether, quite a funeral service is held over the faulty condenser which is at once relegated to the scrap heap. The testing board accommodates 1500 condensers at a time.

But "you ain't heard nothin' yet!" Each single one has yet to be tested for capacity. For this momentous job visual reading capacity meters tick them off at 1, 2, 5 and over, per cent. Anything exceeding 10 per cent. is scrapped. At a bench sits an expert wearing headphones, whose job it is to still further detect any discrepancy, which, at this critical stage, is disclosed by a faint whistle heard through the earphones.

Capacity being declared A1 at Lloyds, the harassed and badgered condensers are next rushed along to a thousand volt motor-driven "megger," where they are required to "hold" the shock for a necessary period.

This last scene of all that ends

A Few Glimpses of the Fine Factory in Latrobe Street



PORTION OF IMPREGNATION PLANT

MOULDING AND FINISHING DEPARTMENT

ASSEMBLING MICA CONDENSERS

PAPER CONDENSER WINDING DEPARTMENT

CAPACITY TESTING, VOLTAGE TESTING BOARD AT BACK

their strange eventful history is the O.K., and it only remains to place on each the hall-mark of approval—the capacity stamp—inscribed under heat.

So is made the T.C.C. mica condenser that all the talk's about. The making of the paper dialectric tubular condenser is another story. This, still in the infancy stage, is rapidly becoming an important part of the company's activities. Dried in ovens for specified periods, each tube passes to a hot vacuum, where for many hours, all air is excluded. At the end of the period, a cock is opened, and an impregnating solution invades the vacuum. Emerging, the ends of the tubes are sealed with a Bitumen content, then dipped to provide an insulative coating. The tin lugs, having been already affixed by electric soldering irons, the by this time greasy and much abused looking tubular passes to the finishers, who bring it to a sense of respectability in the marketable form by which it is so well known.

The concern started operations on 1st July, 1931, in Little Latrobe Street, and was mighty proud of the fact that, during the first month, no less than 600 condensers were turned out. Last year, almost to the date, the present freehold factory was opened for business. To-day, the monthly capacity of the factory is over 100,000 condensers, and the store holds an average of £2000 worth of material at a time; 65 workers are employed, and the T.C.C. condensers are used by the "A" and "B" class broadcasting stations throughout Australia, as well as by leading amateurs, and hopefully the bosses of the concern say: "You ain't heard nothin' yet!"

French Stations

We have had a request from Mr. F. Carville, of No. 10 Avenue de la Liberte, Becon Les Bruyeres, France, for the following to be published in an Australian Radio Paper,

F 8WIL
41.17 Metres. 450 Watts P.H.
F 8LA
41.3 Metres. 14 Watts PH–TG.
Owned and operated by F. Carville, of 10 Avenue de la Liberte, Becon Les Bruyeres, France, wishes VK's on similar KC's to attempt QSO's with either of the above stations on each Friday night, at 12.0 p.m., A.M.T., as from now until July 31st, 1935.

Notes from Federal Executive Wireless Institute Australia

The work of the Executive has been progressing very smoothly of late, with Peter Adams as our new vice-president and chief prize winner (£50 "Wireless Weekly")—Congrats. —Ed.

Re I.A.R.U.—A scheme has been put forward by this organisation for the introduction of a relay net-work for the handling of Ham traffic, such as publicity, notes, etc., of the representative bodies in their respective countries. For a start, this net-work will handle notes between each country and the U.S.A. VK2EL has been appointed for Australia as its station. This is similar to the R.S.G.B. net-work, except that the U.S.A. is the centre of its activities.

W.I.A. (N.S.W. Division)—The N.S.W. Division of the Wireless Institute of Australia has now obtained permanent right to use this name. Previously, this State body was known as the "Association of Radio Amateurs (N.S.W.)" owing to legal difficulties, but these have been overcome, and the name Wireless Institute of Australia is now universal throughout Australia.

Re W.A.C. Certificates—Recent applications for W.A.C. Certificates include those from: VK5WK, VK5SU, VK3ZF, VK2NY, and VK4BB. The latter's cards are all dated 1928, so he should be eligible for W.A.C. and then some.

Standard Frequency Transmissions—The reference made last month to standard frequency transmissions concerned a certain Fullerton Radio Club, and not the transmissions from the W.I.A. Division in that State.

Re Prefix Changes—The prefixes for Ocean Island and Fiji have been changed from VP1 and VP2, to VR1 and VR2 respectively. VP1AN is therefore, now VR1AN, and VP1AM is now VR1AM.

Operating and Experimental Section

28 AND 56 M.C. SECTION.

(Conducted by VK3JJ.)

Conditions on the 28 mc. band gradually declined during May, but several stations took advantage of the DX opportunities which appeared early in the month.

Up till May 14th, VK2EP had fairly regular contacts with W4TZ, W4MR, W6VQ, W6DIO, J2IS, and KIAY, but, after that, only one or two weak W's were heard. In Victoria, there was a slight peak on the 11th and 12th May, during which VK3YP worked W5BDT, W6DIO, and W9NY, while VK3NM had the first contact with J2IS, made from VK3. The latter has been heard and called many times, but seems to suffer with bad receiving conditions.

VK6SA worked VK2EP, VK2HY, VK4GK, and VK4AP during the month, and has received a QSA3 R5 report from W4TZ, which is very FB, considering the distance. On one Sunday, 6SA heard the harmonic of VK3EG at good strength, but no fundamental VK3 signals came through.

While on the subject of harmonics, May, 1935, "QST" quotes as follows:—"One of the best indications of whether or not the band is open is the reception or non-reception of harmonics from the commercial stations near the 14 mc. band. When distant commercial harmonics are heard, which is a considerable portion of the time, ham signals are usually quite strong." We are beginning to think that the reception of harmonics is not such a sure indication of the band being suitable for fundamental work. Many times strong harmonics have been heard when there has been no trace of stations in the vicinity, but, working on 28 mc. Observations on the Japanese commercial harmonics have shown that they are not a reliable check on fundamental conditions. Although at times they averaged the same strength as J2HJ and J2IS, there were a number of days when the latter were heard at good strength, with no sign of the commercials, and vice versa.

May "QST" devotes several pages to 28 mc. work, and the descriptions of gear being used in U.S.A. prove interesting. Contrary to expectations, the TRF receiver still seems the most popular. Several unusual schemes have been employed in their transmitters, most of which are C.C. W4TZ uses a high Q tank for the final stage, which consists of two quarter wave ¾ inch copper tubes, tuned by a shorting bar. W6VQ uses 1 K.W. input to a self excited push pull rig, in conjunction with a multi harmonic antenna over 1000 feet long. In contrast to this, W9NY has been fairly successful with a small half wave vertical wire, fed by a transmission line terminating at a quarter wave matching section. As very few are able to erect an antenna similar to W6VQ, it is to be hoped that he also tried the smaller types to obtain comparisons.

LINK COUPLING AGAIN.

(VK3WY.)

A large proportion of hams nowadays use link coupling between the buffer and power amplifier stages. It is surprising, however, the number who still cling to the old capacity coupling between the oscillator and buffer stages. This is of course due to a desire to cut out the extra equipment, and consequent complications caused by the use of link coupling.

In a transmitter that I was constructing lately, I kept to the capacity coupling, but I never seemed to get anywhere near the drive to the buffer stage that I should have. The tubes used were a penthode in the crystal oscillator stage, and a type 46 in the buffer stage. Trying to locate the trouble, it was realised that it was probably due to incorrect impedance matching between the tubes, as the penthodes high plate impedance was feeding into the low grid impedance of the 46.

Still trying to do without the link coupling, a type of autotransformer coupling was tried. This is merely the familiar method of tapping down the plate tank of the oscillator. Theoretically, it should be possible to match a low grid impedance to a high plate impedance by this method.

Whether or not this is so, however, it certainly caused trouble here by making it quite impossible to neutralise the buffer stage. It was found that this stage would always oscillate strongly until the tap was put back at the plate end of the oscillator tank. By following out the circuit, it can easily be seen that the buffer was acting as a type of T.P.T.G. oscillator.

After going through all the above, link coupling for this stage was tried, and all the troubles immediately cleared up. No difficulty whatever was found in neutralising the buffer stage, and the drive to this stage was nearly double that which had been obtained with straight capacity coupling. Another thing! The troublesome grid choke was no longer necessary, and so was junked.

There is still very little activity on 56 mc. in Victoria, but during the past month VK3KQ and VK2DE have connected on 'phone over a distance of several miles. Several Melbourne stations kept a watch for 3KW of Geelong, who was using a beam antenna recently, but, evidently due to the very low power used, the signals were not to be heard.

Five meters must be gaining popularity in Wagga, as VK2YW was heard relaying on 7mc., the signals from a 56 mc. portable which was carried around the district.

INTERNATIONAL 28 MC. CONTEST.

Approximate points scored in May:—VK2EP 487, VK3YP 255, VK4BB 90, VK6SA 66, VK3NM 54, VK4AP 21, VK4GK 21, VK2HY 20, VK3BQ 16.

Queensland Division Contest

The first of the contests to be held by the Queensland Division of the W.I.A., will be the VK4/ZL contest, to be held on the two week-ends beginning 13th and 20th July. The contest will commence on Saturday, 13th and 20th, at 1200 hours E.A.S.T., and ends at 0000 Sunday, E.A.S.T., both week-ends.

VK4 Stations will call "Test ZL." ZL Stations will call "Test VK4."

Points: One point will be allotted for receiving a report, and one for sending. Any band may be used, 10, 20, 40, 80, 160, and a bonus will be awarded for the multi-band working, consisting of 5 points for one band, 10 points for two bands, 20 points for three bands, 40 points for four bands, 80 points for 5 bands.

The same station cannot be worked twice on the same band, over the same week-end, but may be worked again on another band over that week-end, or on any band at all over the next week-end.

All participants are to forward their logs to, "VK4/ZL Contest," C/o Box 1254V, G.P.O., Brisbane. All scores will be checked, and awards made by Contest Executive, consisting of "three non-participating members," elected by the W.I. Council. Logs will include the call of the station QSO'd, time, date, band, his T/QSA/R, and your T/QSA/R, and points claimed, together with the type of antenna, receiver, and transmitter. Power input is unlimited. Points claimed should be totalled, and the bonus for multi-band working added. A cup will be awarded to the winner in VK4, and pennants for second and third.

This contest has been arranged for your benefit, and council would like to see all members participating. Besides the cup and pennants, your aggregate will go towards your score in the "Cran Cup Contest," as outlined in the quarterly circular.

VK4WI will be on the air on the 3.5 mc. band on Sunday night, 9th June, on crystal control, and each Sunday onwards, between 7 p.m. and 9 p.m. Any further information will be broadcast over 4WI on telephony.

Please give this test your earnest support, as it has been arranged solely for your benefit.

Western Australian Division Contest

The West Australian Division is staging a traffic contest for its members next month, over a period of two Sundays, July 21st and July 28th. Hours of operating will be from 0900 to 1500 hours, Perth time.

Rules:

1. Messages may be sent through any number of stations, but once only through each one.

2. Each station is permitted to originate ten messages each week-end, (two sets), and all messages are to be numbered consecutively.

3. One set of serial numbers is required for both the week-ends, that is, the sequence of numbers must not be broken so as to separate the sets.

4. Messages left over from previous week-end may be relayed the following week-end.

5. Each message must consist of at least ten words in the text.

6. Only financial members of the W.I.A. (W.A. Div.) are eligible for the competition, but if an unfinancial or new member desires to compete, his subscription must reach the honorary secretary before July 20th.

7. One point will be allotted for receiving, and one point for transmitting a message, therefore a complete relay will consist of two points.

8. The station with the highest total of points will receive first prize, and the runner-up will receive the second prize. The prizes will consist of two R.C.A. 46 tubes, and one R.C.A. 82, which have been kindly donated by Atkins (W.A.) Limited.

9. All traffic returns must be in the hands of the Traffic Manager, VK6LJ, by August 10th. Returns received later than this date will not be accepted for competition, and will also lower the total of all the other relaying stations concerned, so don't forget the traffic returns by August 10th.

10. Stations competing, and wishing to contact other contesting stations, may define themselves by calling CQ WIA, and any station calling an ordinary CQ can be looked upon as not being a contestant.

11. Any or all amateur frequency bands may be used, but one message can only be sent once; meaning that one station cannot send the same message to more than one station, and it is up to the receiving stations to relay the message to someone who has not handled it.

J. MEAD, VK6LJ,
Traffic Manager, W.A. Division.

Divisional Notes

N.S.W. DIVISION.

By 2HZ.

During last month the A.R.A. was successful in obtaining the name W.I.A. for its use. This is the most progressive step in Amateur Radio in N.S.W. It's an old, old story why we couldn't use the name W.I.A. before, so possibly it's not worth repeating. The W.I.A. is now 100 p.c. throughout all States, in name as well as support, and now the mother State has fallen in line we can expect big things in N.S.W.

Jubilees seem almost commonplace events just at the moment, and another one to add to the list is the W.I.A.'s Silver Jubilee. Formed originally in N.S.W. by a band of radio enthusiasts in March 1910, the Institute has now grown to a body of International importance and repute. In N.S.W., the Jubilee will be celebrated by various events. An entirely Amateur Exhibition is to be run later in the year. It was hoped that the exhibition could be run in the "Sun" Buildings during November. Unforescen circumstances cropped up, and these arrangements may have to be altered slightly. The completed dates will appear in the next issue of "Amateur Radio." Coupled with this will be a week-end Hamfest and dinner, which will be N.S.W.'s contribution towards a Jubilee celebration.

Don Knock (VK2NO) lectured at the June W.I.A. meeting, on 5 metres, and the lecture proved to be of outstanding interest to members. (Why not send it in for publication.—Ed.)

The ballot papers circularised with reference to changing the name are being well returned, and one answer has been received in Braille.

2FQ, N.S.W. "Amateur Radio" distribution manager, during the greater portion of last month was confined to his bed, owing to a knee being displaced.

Many and varied are the preparations for the October DX contest, the efforts ranging from QRO to SS Super.

The new QSL rules have caused in some quarters no small stir. The N.S.W. Council are certain the rules will work, in N.S.W. the necessity of supporting the representative body. It has been long felt in N.S.W. that W.I.A. (nee A.R.A.) was too long regarded as a form of benevolent society for hams.

One of the worst forms of reaction was seen, or, rather, heard. One kind gentleman who parked right out one end of the band card decried the efforts of the W.I.A. in the QSL section. The general arrangement was to call CQ. A.R.A., when raising a member, to tell him his views in no uncertain manner. Abuse has been long declared no argument, and, to make matters worse, he knew nothing of the rules, and was invariably off the track. The action did not reflect on anyone except himself. Under the circumstances, he was reported to the Radio Inspector for off frequency operation.

LAKEMBA RADIO CLUB.

(Affiliated with the W.I.A.)

The meetings of the above Club are held every second Tuesday at the club rooms, 79 Park Street, Canterbury. The meetings for July and August will be on 9th and 23rd (July); 6th and 20th (August).

A series of lectures has been arranged, the first being delivered by Mr. G. Brown on 11th June. This particular lecture was on A, B, and C Class Amplifiers, but developed into a somewhat heated discussion on "Current Flow and Electron Flow," much to the amusement of several visitors, who afterwards declared that they enjoyed the evening.

Experimental work on 5 metres is being conducted by 2QX, 2XM, and 2OD, while 3CY, 2KS, 2FG, and 2IO have also expressed their intentions of operating on this band in the near future. 2ED, 2PX, and 2QP appear to be the most consistent DX hunters. 3JT is not heard on the air very much since moving to Bland St., Ashfield. Recently Chas. was rebuilding his receiver, and got it working very well, when suddenly it went "dead," and he could not understand why it would not oscillate. After about twenty minutes' trouble shooting, he discovered that 2XW (who lives 50 yards away) had his carrier on the air. 2PX was working DX one morning, when suddenly the power mains failed. He later discovered that it was caused by a chimney of a house catching in the H.T. wires and breaking them. It appeared that one of the local neighbors was shifting his house, which he had mounted on wheels, and, with the aid of a motor lorry, was in the act of dragging it up the main street when the chimney pot struck the wires. The most consistent 40 metre fone stations are 2XZ, 2DL, and 2KS. These stations are often heard operating on dual wavelength, one acting as a relay station, with the aid of a s.w. super. Listeners are unable to distinguish the fundamental frequency from the relayed frequency.

Visitors to the club are always assured of a hearty welcome, and all who are interested are asked to get into touch with the hon. secretary, at the above address.

NORTH SHORE ZONE NOTES.

A.R.A. (N.S.W.).

Another month has slipped by, and with it conditions have gradually changed on all bands. The most improved of all has been 14 m.c., where from mid-day to 5 p.m. W and VE signals are consistently heard. Yank fone reaches its peak around 3 p.m., and one hears such well-known calls as W6CNE, W9LD, coming through at R9. The band is dead at night, however, and one must turn to 7 m.c. to work

W, K6, VE, and XU stations. 7 m.c. is inclined to be patchy, and so 3.5 m.c. is gaining in popularity. On this band the QRN has lessened, and 80 should prove a great hide-out for the boys this winter. 28 m.c. has failed to keep going, and activity has slackened off there.

Looking around the gang, we find 2DE rebuilding a hot new rig—59 co 46-pp 210's. Don still skeds 5FM—they have had almost 100 QSO's now. 2DY has a car, and the accession thereby allows him one arm to drive with Hi. Still, it's a common enough complaint, eh, Don? Dave, 2AE, is building a 20 mx outfit, and still persists in climbing his 70 ft. stick at night to adjust the sky-wire. Hi. 2LA comes in with a wallop. Also 2SV, who uses 4 stage to feed the Zepp. Jack, 2HG, can't work the Yanks fast enough—on RV218 with 80 watts does the trick. Ask him how the South Americans come in. Hi. In Lane Cove, 2VM is the only consistent ham now that 2KJ is rebuilding. Keith uses 80 mx fone to advantage, and yet finds time to shake a festive toe at the local dance. Hi. 2VG is trying his hand at sailing, but often warms his 210 to use DX. 2VP puts out with SE 46's. 2HA has excellent quality music, but his speech needs clearing. His CW is T9 and fb. An old-timer in 2JP makes a comeback, and can be heard agitating 20 mx with a nice sig. Another ham call has gone to the commercials, this time 2KA. Let's know your new "sine," Ron, ob. the "Big Bad Wolf" has come back to the fold, and Bill 2HZ is shoving a nice sig out from his Neutral Bay QRA. The novelty of married life has no doubt worn off a little. Hi. The Crow's Nest Evergreens, 2LZ and 2HY, are relaxing after a hectic time on 10 mx. "Believe it or not—Mr. Ripley"—Con is abounding keen on tal control. Hi, Hi. The sniggle snuggle at 2WW has been completed, and Bill has no trouble with local QRM now. He has a flair for finding 2nd ops. who can grind crystals. Another lad with a new stabilised by Robert, 2SS. He is making a T.R.F. job, and, with a 2A5 in the output, should have no trouble in hearing DX. Recently collapsed when J3HQ gave him QS T9 R9, Hi—on his 45's. Here at 2VQ radio has had to play second fiddle—unusual season, but good reason. Hi. Have you heard 2JE on 80 mx.? His fone compares favorably with any I have heard here. Down with the elite (?) at Moaman. We find Pete, 2FV, plugging away on his new bug, and moaning about a pirate using his call on 14 m.c. The chap in question has worked a pile of DX, and old Pete is getting jealous. Hi. Still, 2PV has four continents to his credit, so why worry? The brainy lad of the village is 2XC, who, after adding two degrees to his name, still finds time for radio. Ian leads the way with any DX that is about. That poor old tired man, 2FM wondering how to square the BCL's. Don't we all? Alec is building a new receiver, and, believe me, it's an example of fine workmanship.

The speed king, 2HI, recently wrapped his mobike around a tram. Tut, tut, Fred! He doesn't believe in brakes; so keep an eye on the silent keys, Hi. In Manly, 2DA is the most consistent, and has a solid sig. on 7 m.c. that the Yanks never miss. 2HF and 2QK are lads who cause dogfights in the U.S.A. 2IX is a newcomer who enjoys a decent ragchew. Haven't heard from 2AX or 2BS. If you want to see bigger and better Manly notes in here, please shoot the dope across to me.

ATTENTION, Gang! There are 8 hams here, including 2SS, 2HG, 2PV, 2LZ, 2VQ, and 2HZ, who issue a challenge to all of you for a tennis match. Wherever you are, if you think you can towel us up (?) don't be bashful and hide your head behind a 201'A, but get into touch with me. We can arrange the time and date to suit all. The telephone number here is J 6052, so come on, gang, let's get to it. What say?

—J. W. A. PATON (VK2VQ).
260 Pacific Highway, Artarmon.

ZONE I. (ZO/VK2PE).

It is a long time since any notes appeared from this zone, but here we are again.

I believe that VK2HV is going to challenge all members of Zone I. to a private DX contest. Well, I hereby accept on behalf of the members of Zone I. The best of luck to you Zone II. chappies; but I think that you will be sparking over that 80 mx Xtal, hi!

Well, here is some dope on the doings on the band. Here are those calls heard and worked during the past two months: VKS, 4CB, 3ZB, 2XO, 2VY, 2KN, 3KI, 2KE, 2WQ, 2BQ, 4HA, 2QS, 2PV, 2YE, 2FX, 2FN, 2GW, 2UW, 2TV, 2JA, 2VJ, 2ML, 2KR, 2ZX, 4NF, 2QC, 2KS, 2HV, 2SQ, 3SB, 4OR, 4RV, 6RL, 5RP, 5HR, 5TX, 7CK, 2YW, 2FX, 4NG.

4CB is now putting out some very good fone with his new Xtal rig. Had a MOPA before that.

4RV is now back on fone, and is now using a MOPA with CW tanken; is putting out a VY FB sig, too.

2YW romps in here at about R8 to R9, and sounds like a BC station. Hi! 2 VJ is also putting out FB fone. 2DQ putting out good fone, and boasting about his DX. Remember your first yank, Dud?

WIGF only uses 300 watts to his final stage! 3SB uses a three stage rig, with 20 watts and telefunken modx. Heard VKZ again to-night. Haven't heard him for about twelve months previously.

2PV will soon have a ten toob SS super. You will just about need 1 k.w. input to keep pace with your RX OC. Hi.

2CR indignant about his call being taken for the new regional station. It is a bit hard!

2FX says that if you want a local ragchew all you need to do is to call CQ DX any night, and you can raise any local chappie you need. Hi, hi.

2WR putting out excellent quality fone, but seems to be troubled with harmonics on the BC band.

Heard 4LW on the BC band this morning, and he came over better than some of the broadcast stations.

2ML uses anything up to a 300 watts input. Oh, boy! for a 852! Hi!

3VY uses a Hartley with loop fone, and the quality is surprising.

2ZX is complaining because his 46 FD won't stand up to the 600 volts on it. Hi, hi! Did you expect it to OM?

4NP is using a MOPA rig, with a 47 MO ES 45 PA.

ZONE II. (ZO/VK2HV).

A CHALLENGE.

On behalf of the members of Zone II. I do hereby challenge Zone I. to a VK-ZL contest.

(Signed) HARRY HUTTON.
VK2HV.

The rules to be as follows:

1. The contest to be held over two week-ends in July, from 6 p.m. Saturday, July 13, until 12 midnight, Sunday, July 14, and again from 6 p.m. Saturday, July 20, until 12 midnight, Sunday, July 21, 1935.

2. The power input to the last stage shall not exceed ten watts, either on CW or phone.

3. Licensed amateurs in Zones I. and II. only are eligible to compete, membership to A.R.A. not essential.

4. Contest to be limited to the 40 and 80 metre amateur bands.

5. Second operators will not be allowed unless the first operator is engaged in his regular employment.

6. For CW, points will be awarded as follows: For contacts with VK2 or VK4, one point; VK3 or VK5 two points, VK6 or VK7 three points, and with ZL1, 2, 3, and 4 four points. If a competitor's phone is QSA5 at the other end, double points will be awarded.

7. Only one contact with a specific station on each of the bands during each week-end will be permitted.

8. The maximum number of points resulting from any single contact shall not exceed eight points.

9. Logs must be to hand at either VK2PE or VK2HV before August 13, 1935.

10. The prize, an 80 metre crystal (not a spec. lense) to be donated to the winner by the contestants of the losing zone.

11. The judge's decision to be binding in case of any dispute.

There's no doubt about the antenna being the secret of working DX. Both 2HV and 2ZP have proved this to their entire satisfaction. With their antennas running due north and south no DX could be raised. When they were altered to run east and west, however, Yanks could be worked with inputs as low as 4 watts, and R7-8 reports were not uncommon.

The rig at VK2ZP is still Hartley-210. It was almost an M.O.P.A. the other day, only it didn't MOPE. Arthur's second operator, Joe, has been on 40 metres quite a lot lately, and it he keeps improving at his present rate Zone II. will have a new ham ere this year passes. Checking over the log at 2ZP for the last two years revealed that 75 per cent. of the reports received had been given as T9.

VK2CR has been on 40 metres over the last few week-ends. Toddy and Jack have very good quality phone, and receive some FB reports from the far north. The transmitter is a four-stage job, and the RX is a four-tube TRF. This station should be a decided asset to Zone II. in the VK-ZL contest. QRP up there, you chaps.

VK2DD, of Tamworth, has good CW, but the phone still needs clearing up.

VK2GU has been QRL at station 2TM, and has not had time yet to pound brass.

VK8, 2UR, 2WT, 2JF, 2JD, and 2NF are QRT.

Eddie, of 2KN, has been rebuilding, and by the time these notes appear should be on with FB phone and CW. The rig is to be Xtal.

VK2KR, the winner of the last inter-zone contest, will have to work hard for the Xtal, as it looks like every chap in Zone II. has his eyes on it.

Mac, of 2ZH, has not been heard on 40 for months.

Ron, 2RV, has been heard on phone. QRO yet, Ron?

VK2XQ, the old John, is sticking on 80, and got his share of the QSO's.

VK2HC, 2BE has not been heard on 40, so guess he is either on 80 or QRL with B.E.R.U. notes.

VK2HY has forsaken SE for CC, and finds QSO's much easier to get. The line up is 46, 46, 45, with about 3.5 watts input on fone and 6 on CW. The Xtal in use is one that was punctured last year; the punctured end was cut off and the edges smoothed up, and the rock oscillated better than before it was blown. Take my word for this, chaps. Don't blow yours just to try it.

Well, that's about all for this month. Don't forget your subs. for "A.R." Don't forget to polish up the gear for the VK-ZL test, and don't forget those Zone notes.—73.

ZONE VI. (VK2QA).

Conditions on 20 are falling off, with the exception of W fone stations, who are coming through in the afternoons, about R8, and appear to be fairly easy to contact. We haven't listened for DX on 40, but the number of fone stations operating during the daylight seems to be on the increase—some very good, and some not so good. A few years ago a chap could be excused for trying loop modulation on a self-excited oscillator, but in these times of advanced modulating techniques and stabilised oscillators, there should be no excuse for those kind of fone signals.

Conditions on 80, as far as local night contacts are concerned, are not too good, qsb and skip being very pronounced, although the ZL and W fone stations come in quite well, which seems to suggest that more use be made of 160 metres for local QSO. There is quite a fair piece of territory available there, which, we believe, could be used to advantage during the winter months.

Read with interest 2ZH's remarks regarding 2MO being able to give the A class stations a few lessons regarding transmission and modulation. If Bill would expend a little of that super adjusting and operating ability in try-

ing to eliminate his third harmonic (which comes in here, about 300 miles away, almost as loud as the fundamental). Then let the engineers in charge of 3LO, 2CH, and 3MA know how it is done, we would be very grateful, as harmonics from all abovementioned stations interfere with our transmissions on the 80 metre band; and, as I mentioned earlier, in these enlightened times, such irregularities in supposedly good transmitters should not be tolerated.

WESTERN SUBURBS NOTES (2O2MY).

Apologies are hereby offered for comments in this column, last month, with reference to QSL cards being posted without stamps. The Bureau mentioned was in no way to blame, as a bundle of cards posted to the Sydney Bureau became broken in transit, with the result that these cards bearing addresses on them were sent on by the postal officials, and charged as unstamped.

VK2EW, of Gladesville, shoves out a hefty signal, and also nice fone, but hardly sounds T9 here.

2PT heard on very seldom, but occasionally after some DX on 40 MX in the evening. Still dabbling about on 10 ES 5MX.

2FD been very QRL building a S S S, but having a bit of trouble with the HF oscillator, and also with 22H's Super.

2OD, after being absent for quite a time, was heard on 40 with a nice T9 Q8.4 5R9 note. Tom does not seem so active since 2XU has departed. Perhaps he misses the QRM.

2FO still trying to make up his mind as to the respective merits of a Half Zepp and a Herts. Appears to spend most of his time hauling at guy ropes.

2IO still pushing out a nice T9 signal on 40 MX, but complains of the QRM from R, the now crowded Western Suburbs gang.

2PK silent for the time being, as, working on night staff, spends most of the day getting shut-eye. Hopes to resume soon with a three-stage rig, using pair 210's in the final.

2GR, once our star BCL entertainer, has been on the sick list again with an unfortunate recurrence of his old illness. We all hope you will soon be well again, Alec, O.M.!

2PG still QRL with work, but rebuilding piecemeal. Expect any time to hear a R Max signal bust through, wigning 2PG. Ronnie's favorite color is green with a black band, but, if you value your life don't ask him why!

2NP and 2NJ both missing for many moons. Sounds very much like YL's again. Did I hear 2YP say that YL's were more interesting than hamming? Don't believe it, O.M.; you ask some of the hams who possess about 6 2nd ops.

Wonder how much power the G's allow their portable stations to use? Early morning, on 2/6/35, G-2-MN-P, calling G-5-ZX-P, was only QSA, R7-8. Probably tack their portable on to the nearest power-house.

Will someone tell EA-1-AE who won the prize for EA during the Centenary Test? I've tried half-a-dozen times to find out, but nobody knows.

Old friends are starting to bob up. Had pleasure of QSO with 4JU and 4PK on Sunday, first time for about two years. 4JU reports sigs. from DX are improving in VK-4, and 4PK reports QRM from fone stations ditto. Same applies here.

NEWCASTLE AMATEUR RADIO CLUB NOTES (BY/VK2RG).

At one meeting recently a new departure was made, when a mock trial was held, 2SO being charged with having no freq. meter or log book, and transmitting third-party messages. Judges were 2ZW, QS, and FN. Crown prosecutor 2CS; R.I., 2MS; assistant R.I., R. Montgomery; counsel for defence, 2KG; and witnesses, 2RO and UF. Great was the hilarity during the proceedings, the gang rising to supreme heights of wit. Eventually 2SO was found guilty, and sentenced to pound brass on the local ferry.

2ZW and 2ZC are both rebuilding rack and panel, and their completed rigs should be something out of the ordinary. Both will use Tri-tet exciter units. 2RG installed Tri-tet recently. Rebuilding is spreading like a disease, as 2UF has put his rig in a steel frame. He is still working W consistently, so getting rid of the haywire can't have done any harm.

2CS seems to have had a recurrence of his old trouble of late. Lionel has been on a lot lately, and usually lands what there is about on 7 MC. Incidentally, 2CS gave an interesting talk, recently, on "Some Points in Transmitter Construction."

Most of the local gang are going in for 5 MX work, and 2ZW and ZC have been carrying out plenty of tests. Stan is about to instal a parabolic reflector to work 5 MX DX.

KEY SECTION NOTES. C. WOODWARD (VK3YO).

At the May meeting of the Key Section, at which 46 were present, ex-VK6XU (now VK3XU) gave us an interesting account of conditions in VK6. He is now stationed in Victoria permanently, and hopes to get his outfit in order almost immediately.

Mr. Fynmore, one of the early pioneers of radio in this State, also spoke at some length on the days before broadcasting.

The nominations for Council are closing at once, and members are expected to show their interest in W.I.A. affairs by voting 100 per cent. for the Key Section representatives.

VK3BQ has been practically off the air, busy at work on frequency meters. His mate is now up again, and it is hoped that it stays up this time.

VK3DM has been rebuilding, and expects to be back on the air again shortly.

VK3RI is changing over to C.C., using 47, 46, and 10.

VK3JH is on the air at last.

VK3UK has been very busy on R.A.A.F. skeds., and is handling VK3ML's skeds. as well.

VK3JX is working on 56 M.C.

VK3ML is holidaying in Perth, and is having a great time.

VK3UW is getting out well on 3.5 M.C., using a quarter wave vertical [illegible].

VK3LN has managed to contact VK3, from W6GUH, and was very pleased to hear our sigs. from the other side.

VK3NM is still on 28 M.C.

VK3RX, from Gunn's Gully, has a really new tube for his transmitter.

It is an Elmac 50 T, and together with a directional antenna. Cedric expects to frighten all the receiving tubes in his neighbors' sets when he gets going.

VK3QJ and VK3WP live within 250 yards of each other. How unfortunate! (for them).

However, when Cedric starts up they will both be shifting to Darwin to avoid QRM.

SHORTWAVE NOTES.
By Assistant Secretary.

Now that this section has been asked to co-operate with the other sections on 56 M.C., things are on the move. The council has consented to send along a number of lecturers, to demonstrate some receivers and aerials suitable for 56 M.C. The first of which will have been completed by Ivan Morgan (3DW), by the time this goes to press. It is intended to hold these lectures on the fourth Wednesday in the month, so here is the chance for the hams to get some ideas for their receivers and aerials.

Our popular secretary, 3XJ, has just returned from a holiday in VIS, where he had a good time with the Wiz's at Bondi. Hope you have a good excuse, Georgie, old boy, when you face your own YL. Maybe next month 3XJ will QSP his doings in VIS.

At our last meeting our popular chairman, Mr. Arthur Mildern, delivered a very interesting talk on "The Workings of the Ultra-short Wave."

As these notes are written we hear that Mr. Jones is not in the best of health. Everybody joins me in wishing him a speedy recovery.

Last meeting a list of places to visit was drawn up, the first of which will be to 3UZ, who have installed new studios and transmitter. Arrangements have been completed for a visit to this station, 3UZ, which will eventuate on Wednesday night at — o'clock, July 24.

NORTH - WESTERN NOTES.
By VK3CE.

In view of the fact that this section notes have of late been few and far between, and not hearing anything of our good friend Bill (3WE), I take it he must be QRL. So with the consent of a few of the gang I am sending the following few notes:—

VK3KR has converter es is now 100 per cent. A.C. oper., only on QRP as yet, es waiting on a trannie. It will give some 750 jolts. However, pur. is not a great asset to Ken., as on QRP he works DX as easily as buttering the morning slice of toast. Has done FB work on 20 es 40 MX over last few weeks.

VK3OR heard on 80 MX again with same FB tone; packs a hefty sig, on AA band; also been landing DX fairly consistently.

VK3JV—Activities unknown; has not been heard for months at AS station.

VK3KI—FB T9X note on 80, heard trying loop nod one nite. Quality not bad; depth!—Nuff sed. Uses RK-20 in PA/PD; es 3.5, es 7 MC Xtals.

VK3CD—Heard with T9 sig. on 80. John is hoping to put fone on this band soon.

VK3TU.—Putting out very nice fone on 80; es working W8Js; es KAs on 40.

VK3ZK, Swan Hill's radio rascal, es telefunken expert, has good fone, with plenty punch down AS way. Building new rig, with 47 CO, 46 FD/BUFF; es 46s, PP, PA.

VK3WN—Struggling along wi a min. of gear, in pur fone at times FB, CW. T8, PPC. Bad luck to have a by-pass go west, and take a 245, es his milliam/meter for company.

VK3HN—A new ham, with PDC sig. from Hartley rig; es RX tube; trying grid mod.

VK3NN, — Again working Sunday a.m. skeds with 3KR; es 3CE, fone FB until put through to by-by; es not so good while QXR on new tube.

VKs 3PY, 3CH, 3LH, 3WE.—Whereabouts unknown, maybe they come on in the wee sma' hours. 3WE heard on 200 Sunday midday with good quality sig.

VK3EP.—The lonely voice of Rochester heard in weekly hook-ups with 3ZK, es 3DW. Building new rig in readiness for AC, which is coming in the near future.

VK3DW.—Comes in very nicely; plenty punch, es good quality on his 80 MX sigs.

VK3HL.—Heard on Sunday morning skeds with 3KR, es 3BQ, CW, O.K., but fone very indifferent; believe trying out telefunken.

VK3CE.—Now has full wave 40 MX xepp; es getting good reports on 80 MX, with 201 ACO, es TC04/10 PA as the RF squirt.—T8.

WESTERN DISTRICT NOTES.
(By 3BG/3BW.)

With the coming of the cold weather, together with very patchy conditions, activities on all bands are much less, 14 MC possibly being the most popular band. 7MC is practically useless after dark, with 3.5 MC very little better, as signals fade nearly right out after sunset.

3NQ reports QRM on 14 MC the worst ever experienced; heard FB8C, OH3NP, and a W7 all on top of one another, calling CP! Has changed to 3.5 MC, and works ZLs.

3GQ has been testing low-power against high-power, and finds reports on QRO are very little better than with QRP; in no case was the difference more than one point. This test has been tried with stations in four continents. And still the gang yearn for 852's and amps in the aerial!

3GC's PA tube has departed this life. He has purchased one of those $/9 plus sales tax type 210's for the job.

3NK, using a single 245, has worked five continents.

3EK has been on phone on 14 and 7 MC, having worked quite a number

of Yanks on the former band.

3CK, who has been QRP with dry batteries, is considering trying stepping up DC from accumulator by means of a Ford coil vibrator as make-and-break, and a transformer.

3OR has a gold-mounted frame for his W.A.C. certificate, which he received lately, fb.! 3HG also received the much-coveted certificate a short time ago.

3KR is now completely AC operated, having discarded all his DC gennies and batteries.

3NN heard on 3.5 MC; phone with very badly adjusted transmitter, his carrier spreading 50 KC round the band.

3GZ heard on 3.5 MC with FB T9 sigs.

3KW changed to 7 MC from the "Publicity Band," but hasn't been heard on much.

GOULBURN VALLEY NOTES.
By 3DW.

The main event this month was a trip to Rochester by 3CN, 3SN, and 3DW.

Faring forth in DW's Morris the boys arrived at 3EP's shack at 1330 hours on Sunday, May 26, and a long and lusty CQ on the horn brought Ted out at the double. Although the gang has had many FB QSOs, this was the first personal contact, and after introducing ourselves to our host (who also acted the part of butler), were ushered into the home, and there met Mrs. Perkin and the two Young Ops. The next point of contact was the shack, and there we had the pleasure of inspecting the gear—a nice, tidy arrangement, too. Ted informed us his power was approximately 8 undervarnished watts, and promised us at least 25 big fat watts when the AC is installed.

EP and DW started a chinwag that threatened to last forever, so Snowy and Dud inspected the town and the YLs for about an hour, and reported most everything QSA5, but stated that there were too many T9 XLs about. Evidently EP is doing a good thing in the Xtals! It's not Easter, either!

As usual when you are entertaining visiting lams, the hands suddenly die. This day was no exception, and although we all called lustily into the GE home broadcaster, and pounded brass, not a soul could we raise; so, after pleasant though forcible remarks about conditions, adjourned for afternoon tea. And, say, gang! don't all rush to EP's at once, but those sausage rolls were the berries. (Congratulations, Mrs. Perkin! We thoroughly enjoyed and appreciated our visit.) Time certainly flies, and before we had become reasonably settled O.M. Time decreed we should wend our way homewards. So, after bidding our hosts good-bye, cranked up the Morris, and with bitter tears of regret streaming down our faces set out on the homeward path—and what a path! We lost our way! Seems quite a habit with hams, this getting lost! However, we eventually met the farmer's daughter (and the farmer), who showed us the way out—of our difficulties, and so we proceeded for a distance of some miles without further mishap, until 3SN surprised us by asking did we have any lights. Further inspection showed that the ammeter was not functioning, and so with many hums and ha's (WX was cold), we bundled out, to find that one of the battery lugs had broken off. Temporary repairs were soon carried out, and we reached Shepparton, roughly three hours after leaving Rochester, a distance of fifty miles. HI!

At the present time 3EP is working on his new power supplies; has the transmitter built. This consists of either a 47 or 46 for the CO, 46 doubler, and pair of 46's in parallel for the PA.

3CN has built up the same combination, but struck trouble with the Xtal holder. Top plate became warped through overheating when soldering the connection to it, so necessitated regrinding the plate. Xtal should be to hand shortly, and we will have Snowy going full bore by the time these notes go to press.

3SN has completed his rebuilding has 2 complete Xmtrs. in the same frame. 47/46 for 3.5 MC, 47/46/46's parallel for 7 MC. Common power supply.

Dud is also adding pair of 2tens in PP to the 7 MC rig, so should get somewhere. 3DR does very little ether busting—is rebuilding again, and sure getting that rig into a small space.

Several QSO's with Scanty Jimmy (The Voice of Dynamic Personality at 2ZK) have resulted in Jim joining the G.V. Section, and with 3EP we now have all that remains of the old original Chain Gang.

By the way, 2K rustles silks and satins (or is it shirts and trousers) in his spare time. Transmitter is 46 Hartley Osc. and 210 PA telefunken modulation, using PM4DA modulator with 46 speech amplifier and PMG mike. Receiver is, as Jimmy so slippingly put it, over a QSO one day. The Wild World Two's 6 to 8 and 2A5. Input on fone 6 to 8 watts.

Had 3XJ at Swan Hill, recently, and George, doing as Rome does, had to stand it until 3 a.m. HI!

Stations most heard up there are:, 3EP 3XJ, 2EX. 5IV, 7RC, 2QA, 2HU, 5HD, 5KL, 5WJ, 3WE. Haven't heard much of Bill lately. What's the matter, O.M.? Alf's power supply still punk, I suppose. HI! 3WN, 3CE, 3TL, 3DW usually about, with numerous others.

3DW has gone across to the Tritet exponents, and so far is perfectly satisfied with results on the 3.5 and 7 MC bands, using 3.5 MC Xtal, but considers that a 59 without further doublers is useless for 14 mc/s. It is driving a 210 on both the 3.5 and 7 MC bands, with excellent results.

At present engaged building a unit with a 59 and 46 as the first two stages of a three-stage rig. This unit also fits into a portable, and when not in use this way transfers to the home station to drive a 210 final. It is proposed to use the 46 as doubler for 14 MC or as buffer for 7 MC.

Quite some correspondence has pass-

ed between 3WG and 3DW recently in reference to the W.I.A. A number of points have thus been cleared up, with the result that every effort is now being made to have our G.V. Section 100 per cent. representative of W.I.A. So far results are very encouraging, and we expect to start the new W.I.A. year very near our goal.

I do not know the position in other Sections, but would suggest that those hams responsible for Section Notes check up and see if their Section is 100 per cent. W.I.A., and if not then GO TO IT! YOU WRITE THE NOTES! NOW WRITE UP W.I.A. MEMBERSHIPS!

Had the pleasure of seeing VK4YL and her father in a newsreel on Saturday, June 15. VERY FB4YL, but where did the key-clicks come from?

Two more budding hams at Girgarre, near Rochester, coming along under the careful guidance of 3EP, who sends them slow Morse practice on Sunday afternoons, and answers the numerous questions that are fired over by post. Ham spirit so much talked about is ably demonstrated by Ted's untiring efforts with these fellows. Also, we learn of Mr. Kruger, of Charlton, another AOPC aspirant. Our best wishes. O.M.'s. 73 from the G.V. boys.

QUEENSLAND DIVISION NOTES.

The last general meeting of the Queensland Division, held at headquarters, Heintorff House, was exceptionally well attended.

It was proposed to commence a new series of student classes as from July 1.

During the coming year a number of cups will be competed for, the first contest being in the form of a VK4/ZL contest, to be held on the week-ends beginning with July 13 and 20.

The N.Z.A.R.T. has kindly consented to co-operate with the W.I.A. in this respect. Besides the cup, attractive pennants will be awarded to those members gaining second and third places. See Operating and Experimental Section for full rules.

VK4RY is away in Toowoomba at present, but we hope to hear him on the air again in VIB shortly.

VK4LB—Still using his P.P. 46's with excellent results. Joe has been rather QRL lately!

VK4UW is the latest addition to the "U" gang, which compriss VK4UU, VK4UB, and VK4UR. This gang is exclusive, and all members are 100 per cent. QSL and DX.

VK4AP, after working W8VQ on 28 M.C. has gone back to 14 M.C., and is wiping up the DX up there, and getting swell reports. That 800 sure puts out the juice. Alf!

VK4EL has been heard working Yanks on a bug. The dots are rather profuse, but the keying is quite readable.

VK4RC seems to have pulled out now that he is W.A.C., but it is rumoured that his RX is punk.

VK4EN puts a solid signal into VIB some nights from Longreach. Eric can sure handle that bug. The Yanks think so, too!

VK4KA getting out swell with his four 45's, and works plenty of DX. When are those RK-20's going on, Syd?

VK4AF, Clifton, has been QRP on 2 watts, but has done some FB work with it, working South Americans, etc. He is very interested in 56 M.C. work.

VK4EI experiencing a run of bad condns, and not working his usual parcel of DX. Hope it clears up soon, Roy!

WEST AUSTRALIAN NOTES.
By VK6CP (received by radio).

A shack meeting was held at VK6LJ's on May 30, and it was very pleasing to note that some of the older hams have returned and promised to take a further interest. Considering the weather conditions a fair roll-up attended. Last, but not least, our honored guest, VK3ML, and his escort and bodyguard, VK6MN, arrived, and after a general introduction VK6LJ called upon the president, VK6BN, to spout a few words of welcome, to which VK3ML replied. Whilst on his feet Bob expounded some dope on this magazine, and also the working of the VK3 Division. This was followed by a general discussion amongst the lads present, and several copies of "Amateur Radio" were handed out, each marked by spite, etc.! I might mention that those said copies belonged to VK6LJ himself, and are treasured and coveted by him, and spite is usually against the rules of book handling.

During the course of events a cine show was put on by VK6JJ. The films included one of the Cup on a field day and social gathering at Penguin Island. Those who could not row had the laugh over some of the gang in the persons of 6LJ, 6EL, 6CX, and 6LY, when the film showed them struggling in vain to strike the water with the oars. You will notice that I said "struggling in vain"! The other item of interest was the supper, which was brought along by the gang in the form of a pound night, and duly delivered during the clerical display.

Concluding the eats and the running of Mickey Mouse on a celluloid strip, the group gradually dispersed after wishing the visitor a pleasant trip back.

Those present included 3ML, 6BN, 6WS, 6KO, 6CB, 6BB, 6MN, 6JG, 6LY, 6JJ, 6JS, 6KM, 6FH, 6WO, 6WR, 6LJ, and Mr. Wignell.

VK7 NOTES.
By 7PA.

(H. M. Moorhouse, hon. sec., Divisional correspondence, Box 467E, G.P.O., Hobart.)

The annual general meeting and its associate functions were successfully concluded during the long week-end, June 1 and 2.

The meeting took place in the Club Room, at 95 Collins Street, commencing at 7 p.m., Saturday, June 1. Annual report and balance-sheets were read and confirmed, and a vote of appreciation was extended to the officers for the year just ended.

The secretary's report showed a very favorable position as regards membership and general activities, but unfortunately the same cannot be said for

that of the treasurer, as so many members failed to make themselves financial. At this juncture it might be well to state that this year the membership list will suffer in consequence if this position is not rectified within the time set out in the articles of association, as it is definitely intended to apply these articles covering this matter, as other efforts have been to no purpose.

The Council for the ensuing year has not been changed, excepting the office of country member, where Cliff Parish (7CP) has replaced Jack Wallis (7JW). Owing to the retirement of F. W. Meadhurst (7AH) from the office of president, W. T. Hooker (7JH) was elected by ballot to this office.

It is assumed that the old Council was entirely satisfactory, no other nominations, except that previously stated, being received. It goes without saying that our secretary for the past year is continuing in that office, and we hope that he will keep up the good work. Jack Batchler (7JB) is retaining the offices of QSL and traffic managers, and hopes to enlist an assistant outside the city area, for traffic, as QRM is prohibitive of satisfactory operation at some scheduled periods at his QRA.

A smoke social was conducted in the room immediately after the meeting, and, although rather poorly patronised, was voted a huge success by all present. Several musical and vocal numbers were given by friends and members, and 7PA's speech amplifier was made available to fill the dull spots with recorded numbers, and was mainly used during the clearing-up, afterwards.

Two presentations were made during the evening, the first being a "surprise packet"—at least to the one concerned—in which the secretary was asked to accept, as a token of appreciation from members for his untiring work in general and the 11th Annual Convention arrangements in particular, a Weston 0—1 M.A. meter, suitably inscribed. The surprise proved to be so complete that a response was almost beyond him for the moment.

The second, a cup, also suitably inscribed, was presented to Ron. Cannon (7BC) for gaining highest points for VK7 in the Victorian Centenary DX contest; but owing to no Northern members being present, the secretary was asked to accept it on behalf of 7BC, and forward same to him at a later date.

At the conclusion of the evening a vote of thanks was accorded the visitors for their valuable assistance with the entertainment.

A field day was conducted on Sunday, the 2nd, and, although the weather was frosty and bleak, those who took part had quite an enjoyable outing.

The hon. secretary and 7JH took charge of the transmitter for the day, and were on the road soon after 8 a.m., and were hidden and on the air to schedule, but experienced some trouble with the portable power supply before going far, so were compelled to go off the air and move their position to where the A.C. supply was available, having carried an emergency power pack just in case.

The final location was at Plenty, approx. ten miles outside New Norfolk, the starting point. The hunting party consisted of only four cars, each equipped with receivers, and the 80 meter band was chosen, as usual. Only one car—Mr. Burdon and party—was successful in locating the transmitter without opening the sealed directions given at the start. The others, Messrs. T. W. Hopkins and party, N. Gillham and party, and 7PA and party, submitted.

The transmitter closed down, perforce, shortly after 1 p.m., as the local supply cut off. This tricked some of the troops, as their directions didn't allow for the second position, and directions couldn't be given before closing.

After having lunch some of the boys amused themselves with a football, and, tiring of this strenuous pastime, finished up by mingling with some of the YL's of the district. Too bad that you had to be lugged off home, boys!

All who are acquainted at all with our Grand Old Man of Radio (7AH) will be sorry to hear of the passing of "Pop's" life partner, Mrs. Meadhurst, and will join with us in extending our deepest sympathy to him in his hour of sorrow.

(Continued from page 9)

The selectivity may be determined experimentally by placing an R.F. ammeter in the parallel resonant circuit, and noting the wavelength at

$$\frac{8}{10}$$

which the current is — of the current at resonance. Then substitution in equation (11) solves the problem. A selectivity of 1000 to 1500 is very satisfactory in practice.

Example.—What must be the inductance of a coil to be used in a parallel resonant circuit of selectivity 1000 and impedance 500,000 ohms at a wavelength of 40 metres?

Here $Z = 500{,}000$
$h = 40$
$S = 1000$

whence, from equation (14) the inductance required is 6.7 microhenries.

RESUME OF IMPORTANT RESULTS.

$$L = \frac{A^2 n^2}{9A + 10B} \quad (7)$$

$$L = \frac{\frac{1}{w^2}}{\frac{40}{Z\,h}\,\frac{9A + 10B}{}} \quad (8)$$

$$L = \frac{}{2959\ S} \quad (14)$$

R.A.A.F. Wireless Reserve Notes

FEDERAL NOTES BY THE C.O.

For several reasons the Reserve has lately taken a huge turn for the better in more Districts than one. In Queensland the co-operation given to the R.A.A.F. during the Survey flight had much to do towards the renewed enthusiasm of the members. Then, again, the D.C. in this District is concentrating on exercise watches and the enrolment of new members, six of which are to be forthcoming. In VMF the members went out of their way to give 1AI a 100 per cent. time during his short stay at the home of 6ZI.

Much misunderstanding of procedure was cleared up in three lectures, and now 6ZI, 6Z2, and 6A2 rank amongst the best of the Reserve's operators. Here, again, promises are given for increase of membership, amongst whom are VK6JE and VK6AT, at Kalgoorlie. It looks as though it will not be long before a complete Section exists in that city.

6A3 at Wagin and 6A5 at Northam, appeared on the air for exercises with 1AI from 6ZI's shack. Taking it all round, VMF will soon be challenging all other Districts for efficiency.

The recent Laverton Camp had effect on VMB, also, where activity is increasing steadily, the main difficulty at present being the impossibility of communicating with all members at the same time on 80 metres, owing to skip troubles. VMC has not this difficulty to contend with, owing to its size. 2A5 is acting deputy for Federal watches, whilst 2Z1 is working out better schemes for District zoning.

Members will be interested to know that approval has been given for the purchasing of crystals for Reserve work. It is now only a matter of calling for tenders for same, and then they will be in members' hands.

Frequency allocations have been drawn up for each District, so that every member of a Section will be on the same frequency, thus making the work of dial twisting negligible.

The results of the examination papers will show what progress each member has made in the past year, and will allow D.C.'s to reshuffle members accordingly.

THIRD DISTRICT.

They say that anticipation is always better than realisation, and most of us have, at some time or another, proved this to be true. However, our Reserve Camp must have been the exception that proves the rule, because, although the anticipation was great, the actual realisation far exceeded the hopes of even the most optimistic members. The sad outcome was that VMC nearly ceased to become an active District, as practically every man seemed to desire to transfer to the permanent forces. However, things have settled down again now, but with efficiency at a level never before approached.

All the vacancies left in Sections by men temporarily inactive and men who have transferred recently, now been filled, and with VMC5 now fully active we will start the new year next week with high hopes that our most successful year is ahead of us.

The first of the new semi-permanent Section leaders take office on July 1, and in 2A5, 3B3, 3C3, 3D4, 3E1 we have five first-class leaders, who should keep their Sections swinging along excellently. A S/L's bulletin will be sent out each week, to keep them posted with the latest information and instructions, and when we get our new Section crystals the Reserve will then be able to advance in a manner never before possible.

3A6 has been transferred to the permanent forces. Bill is a good man gone from VMC1, but we wish him the very best of luck "down below." We have replaced him with one of our new members, 3SN, the postmaster at Shepparton—a crack operator and a worthy addition to VMC1 ranks.

3A1 has had a lot of trouble with his rig, but everything is O.K. now.

3A4 has been very busy rebuilding the B class station at Ballarat.

3B1 has the flying bug properly, and seems to spend half his time in the air. As he is off the air temporarily he has been replaced by 3AN, Redcliffs.

3B3 is rebuilding his new outfit. He's a real ham, because he has only just finished it.

3B5 very busy on his property at present. Spends his Sundays packing for Tuesday's market.

3B6 has been transferred to the country, and has been replaced in VMC2 by 3GC, Camperdown.

3D6 is now settled down in double harness! All VMC members join with me in wishing her the very best of luck and happiness. She still is one of our most regular stations, so apparently remote controls the kitchen from the shack!

3E1, the new S/C of VMC5, puts out a great signal with a great fist behind it. He will make VMC5 one of the best Sections in VMC before long.

The contest for crack Section for the year 1934-35 is nearly over, and there is a neck-and-neck fight for first place. The winner will only get home by a very small percentage by present indications.

Technical Articles Wanted

Australasian Engineering Equipment Co. Donate Prize for Best Article Published During September, October, and November.

Through the kindness of one of our advertisers, the distributors of the well known TCC range, we have pleasure in announcing a competition for the best technical article published during September, October, and November. The best articles will be published each month, and the Editor will award the prize to the writer of the best article published during that period. The prize so kindly donated by the Australasian Engineering Equipment Co., is two 4 mfd TCC fixed condensers, 1600 volt working voltage. Now it is up to all you fellows to do your bit, and show our advertisers that their generosity is appreciated.

Most of you must have some dope as a result of your experiments—put your ideas on paper and shoot them in. Articles should not exceed 2000 words, so get busy and let us have them as soon as possible. The magazine committee's decision final.

HAMADS

BRIGHT STAR RADIO—VK3UH
517 Lower Malvern Rd., Glen Iris

Crystals accurately ground from best Brazilian quartz and tested to 50 watts input to penthode oscillator, 200, 160, 80 meter, 10/-; 40 meter, £1. Plug in type holders, 5/- each.

Power transformers, 300 watt, 2000 volts each side of centre top, at 150 milliamps, £4; lower voltages cheaper.

Filament transformers, any number of windings, 10/-.

Call or write above address. Satisfaction guaranteed.

CRYSTALS

Genuine X or Y Cuts. From the best Brazilian Quartz. The output of which speaks for themselves.
200 Mx, £1/5/-; 80 Mx, £1
40 Mx, £1/10/- to £3/10/-
Blanks supplied in quantities. Rough cut or Osc.
P.R. WATSON (VK3PY), Box 49, Warracknabeal, Vic.

For Sale.—ESCO 400 Volt 60 Watt D.C. Generator. In perfect order. £7/10/-. VK3KR.

Federal and Victorian Q.S.L. Bureau

R. E. JONES, VK3RJ, Manager.

By R. E. Jones, VK3RJ Manager.

Interesting details are to hand concerning hams and conditions in Madagascar. M. Bour, of FB8C, states that QRN is too heavy to permit of much work on 7MC, but good results are obtainable on 14MC, even with QRP. FB8IA and FB8C are the only active hams in Madagascar, while there are two active hams in the Reunion Island. Since April, 1934, FB8C has contacted 65 countries, and uses 350 volts on a TB 04/10 in a Mesny rig. Very shortly when additional gear arrives, he expects to get going on 28MC with an electron coupled rig. FB8C is an ardent stamp collector, and his full QRA is:—F. F. Bour, Tananarive, Madagascar.

We regret to record the death of Bailey Shaw, W6KBX, of Buena Park, California. In a letter to the Bureau, Mrs. Shaw, mother of W6KBX, writes: "His key is silent, but his work is going on in a better world. God called, and Bailey answered in his sleep. Please let any of Bailey's friends in your country know, especially VK3GQ, VK3DT, VK3MR, VK2GC, VK2FZ, VK2XJ, VK2YL, VK5HG, and VK5ML."

The Bureau is in receipt of several chain letters, originating both in Australia and abroad. It is needless to add that these were promptly consigned to the waste paper basket. Superstitious hams are advised not to waste their cash in sending these letters to the Bureau, as the QSL Manager is not sufficiently avaricious to fall for the "rewards" offered by compliance, nor is he intimidated by the "curses" due to non-compliance.

Cards are on hand at the Bureau, 23 Landale Street, Box Hill, for the undermentioned Victorian stations. A stamped envelope will secure them:—3AN, AX, BK, BS, CD, CW, EG, ER, EQ, EW, FH, FW, GJ, GR, GW, HS, HR, JG, KI, KT, LY, NA, NG, NW, OD, PC, QP, TA, TY, UJ, WD, WJ, XK, YR, YW, ZC, ZJ, ZL, ZK, ZX; Messrs. NYE, VKRD, and VKYK.

For Sale.—Voltmeter, Nuremburg, 12 ranges, ½ to 2500 Volts D.C., 1000 O.P.V. tested accurate, £2. Xtal Pick-up, with tone arm, 25/-; B.T.H. Senior Pickup, recent swing-back head model, 25/-.

Wanted.—Direct current gramo. motor; Various meters of good make, including moving coil D.C. ammeter, 5 to 20 amp; A.C. Voltmeter about 100 to 300 Volts.

Bruce Mann, Quambatook.

What offers for these Weston's? Model 425, 0-3 Thermo-ammeter, seals unbroken; Model 501, 24 in. A.C. 0-15 Volt-meter. Also B.T.H. Minor pick-up. All as new. VK3BJ, 161 Napier St., Essendon.